

Remedial Investigation Strategy Discussion

ATTENDEES: U.S. Environmental Protection Agency (USEPA), Nevada Division of Environmental Protection (NDEP), Atlantic Richfield (ARC), Yerington Paiute Tribe (YPT) and consultants/contractors (see Attachment 1 – attendance roster)

DATE: 15 December 2015

PROJECT: Wabuska Drain (OU-7)

Introduction

The primary purpose of the meeting was to develop an overall strategy for the Wabuska Drain (OU-7) remedial investigation (RI) at the Yerington Mine Site and to review and agree upon the key decision points summarized in the Phase 1 Work Plan (July 14, 2015 Draft Wabuska Drain [OU-7] Remedial Investigation Work Plan – Conceptual Site Model and Data Quality Objectives, Yerington Mine Site) and October 7, 2015 Draft Wabuska Drain (OU-7) Phase 1 Field Sampling and Analysis Plan, Yerington Mine Site. The secondary purpose was to discuss the follow-up items from the November 24th discussion.

The meeting discussion was guided and recorded on one flip chart page, and three white board note sets by the USEPA Project Manager, Mr. Dante Rodriguez. Photos of the flip chart page and the three white board note sets are included as Attachment 2.

Action Items

Action items and parties responsible are summarized on Table 1.

Table 1. Action Items

Wabuska Drain (OU-7) Remedial Investigation – Phase 1

Action	Responsible	Status
Photo of Hand Auger Sample Core Sleeve	Greg Davis/B&C	DONE - Photo of AMS soil recovery auger with fitted liner for sample collection sent 16 Dec.
Revise ARC SOP-31 (XRF Soil Analysis)	Greg Davis/B&C	DONE – Revised SOP (SOP-32, Revision 1) issued 21 Dec.
LiDAR Resolution	Dietrick McGinnis/McA	DONE – Bare earth LiDAR resolution (1 m horizontal; 10-15 cm vertical) sent 15 Dec.
OU-7 Associated Peripheral Process Components	Ken Greene/CH2M	DONE – reference to Final OU-3 Work Plan describing Sub-Area 12 and ID VV and ZZ association with OU-7 sent 23 Dec.
Notice to Proceed	Dante Rodriguez/USEPA	DONE – ARC response to USEPA comments received; USEPA approved Phase 1 FSAP and provided notice to proceed 23 Dec.

Discussion

Key decision points presented in the Phase 1 Draft Wabuska Drain RI Work Plan and Draft FSAP were discussed and are summarized as follows:

- Media will include soil and sediment within/along historic and current drain alignments
- Media will include surface water within current drain alignments
- The types of information needed, scope elements and inputs covered are shown on Table 2

Table 2 Information Type and Inputs

Wabuska Drain (OU-7) Remedial Investigation – Phase 1

Information Type	Data Source	Inputs
Soil/Sediment	Grab and borehole samples	<ul style="list-style-type: none"> • Drain soil/sediment (in-situ & dredged), wetlands • Ag soil (mine & non-mine influenced) • Background soil
Water	Surface water and groundwater	<ul style="list-style-type: none"> • Surface water occurrence • Wetland occurrence & surface water source(s) • Groundwater quality & flow
Other	Biota, terrain / topography, hydraulic practices, Ag field management	<ul style="list-style-type: none"> • Aerial imagery (DTM & LiDAR) • Public records review • Interviews
Fieldwork	Schedule and reporting	<ul style="list-style-type: none"> • Aerial imagery (DTM & LiDAR) • Public records review • Interviews

Data analysis will assess potential sources, pathways and contaminant distribution versus background to differentiate mine impacts, identify data gaps and provide inputs to update the conceptual site model (CSM).

24 November 2015 Discussion Items – Follow-up

Follow-up items from the 24 November 2015 conference call that were discussed included sample collection from the hand auger, selenium detection limits, potential updates to B&C SOP-31 for X-ray Fluorescence (XRF) samples, and opportunistic sampling of surface water found in the drain.

Hand Auger

ARC confirmed that samples would be collected to 15 feet below ground surface (bgs) within historic/current drain alignments and along step-out transects, with hand auger sampling occurring to 6 feet bgs and direct-push sampling (e.g., DPT) extending from 6 to 15 feet bgs. The discussion focused on the need to collect relatively undisturbed subsurface samples so that indications of sediment at the bottom of historic/currently buried drain alignments would be better identifiable. ARC noted that hand augers would be fitted with a dual-purpose tool that allows insertion of a sample liner at discrete depth intervals. Greg Davis/B&C generally described the tool and committed to providing a picture/description of the dual-purpose auger tool.

Selenium

The FSAP presents the method detection limit (MDL) and reporting limit (RL) for selenium at 0.45 and 1.0 milligrams/kilogram (mg/kg). The follow-up discussion reiterated that these limits may not be sufficiently low to perform a screening-level assessment for ecological receptors. ARC indicated that the levels were appropriate for the screening-level assessment and referenced background selenium concentrations in Subareas A-1 and A-2. It was pointed out that neither of these subareas are specifically applicable to OU-7. It was agreed that selenium samples would be (1) analyzed per the FSAP (EPA Method 6020) and archived, (2) results would be evaluated by ARC, EPA and other stakeholders against the MDL and RL within the 180 day holding time, and (3) archived samples would be reanalyzed for selenium using a different analytical method capable of achieving a lower RL/MDL, if needed.

XRF Standard Operating Procedure

ARC agreed to revise SOP-31 to describe both modes (in situ and intrusive) of soil testing described in EPA Method 6200 and present testing procedures that will be used during the OU-7 RI to improve the precision and accuracy of field measurements. It was reiterated that the XRF instrument is intended to provide screening-level results, which will be used to identify discrete 6-inch intervals for geochemical analysis by the laboratory.

Surface Water Observations

The Draft Phase 1 Work Plan (July 14, 2015) included media-specific data quality objectives (DQOs). For surface water, these were (1) characterization of surface water conditions and maintenance activities and (2) opportunistically measure flows and collect water samples for laboratory analysis. This information supports initial assessments of surface water conditions and quality, potential human health and ecological risks through preliminary risk-based screening, and guide decision-making regarding additional data collection activities in this and possibly other reaches, of the Wabuska Drain.

The discussion focused on the absence of surface water characterization (flow occurrence or geochemical) activities in the October 7, 2015 Draft Wabuska Drain FSAP. As discussed, ARC's approach would be to evaluate sediment and soil impacts (location and severity) in the Wabuska Drain and design a surface water sampling program based on those results. It was suggested that auto-sampling devices or flow measurement devices (e.g., data sondes peak water level floats) could be installed to enable cost-effective water quality and flow data collection. Placement at locations of likely flow, such as at culverts, was mentioned. ARC reiterated that once soil/sediment sources in the Wabuska Drain have been identified and preliminary observations about flow conditions (location, origin and volume) are better understood, a surface water sampling program would be designed.

Overall Strategy Discussion

The overall strategy discussion briefly summarized in Table 2 is more thoroughly discussed in the following paragraphs and are intended to satisfy the overall and specific goals outlined in EPA's OU-7 investigation strategy (Table 3).

Table 3. Investigation Goals

Wabuska Drain (OU-7) Remedial Investigation – Phase 1

Type	Objective
Overall	Define nature & extent, fate & transport
	Determine impacts to human & eco receptors, quantify risk
	Define potential remedial measures, collect information to do
Specific	Understand surface water/sediment sourcing -> to surface/sub-surface soil
	Screen COPCs per RSC, EcoSSL, state water stds, MCLs
	Determine low-lying/ponding areas increase COPC infiltration
	Determine if COPC get resuspended in water OR remain in sediment (both in-situ & dredged)
	Fate & transport of COPC that impact plants & animals
	Determine whether COPC remain in soil (surface & subsurface) at rail spur
	Determine whether sumps at rail spur OR vaults at pumphouse released COPCs

Soil/Sediment

- Hand auger sampling occurring to 6 feet bgs and DPT sampling extending from 6 to 15 feet bgs within historic/current drain alignments and along step-out transects
- Hand auger sampling to 6 inches bgs along service road locations

- Agricultural field and background hand auger and DPT sampling at locations specified in the FSAP
- Evaporation Pond (OU-4) findings are being compiled and may inform aspects of the OU-7 investigation; data tables are forthcoming

Water

- Using HEC-RAS, model surface water runoff and sediment transport (Yerington Mine to YPT north Trust property boundary)
- Run various storm (10-, 25-, 100-yr) events, /irrigation scenarios to mimic historic flows documented during Anaconda's operation
- Solicit stakeholder input to determine impound areas, lateral backup locations, etc.
- Verify historic mine flows (spring-like) into the drain originate from groundwater infiltration or seepage beneath earthen berm
- Confirm Anaconda's corrective actions to mitigate flows from UEP to drain
- ARC will initiate access with tribe to sample wetland soil on Trust property
- Once source soil/sediments are identified in/adjacent to drain, will use existing quarterly groundwater data and transducer data inputs to (1) evaluate vertical transport to groundwater, quantify rate of release, determine fluid flow through vadose zone and groundwater mixing zone
- Background Groundwater Quality Study may provide content applicable to the OU-7 evaluation and compilation of draft submittal is ongoing

Other

- Analyze topography/topographic relief and drain channel using ARC's 2011 aerial survey/DTM results, Google Earth or LiDAR (DRI or Nevada DEM), historic USGS topographic surveys/maps
- Anecdotal information regarding past agricultural practices (including dredging) may be useful but reliability uncertain – need records or confirm through interviews
- Current practices (including dredging) useful for risk assessment
- Soil chemistry (amendments, etc.) will rely on existing, planned and background soil data and perform statistical comparison of data sets
- Crop-specific amendments determined through interviews with property owners or suppliers, or could apply regionally based on tribal usage

Fieldwork

- Prefer to finish before irrigation season starts (April 1)
- Fieldwork duration – 6 weeks (January/February 2016) depending on (1) weather, (2) DPT/laboratory and XRF availability, (3) survey/staking locations
- Laboratory results received ~6 weeks from submittal, ~2-3 weeks to validate, ~2-3 weeks to review/compile – ready for stakeholder discussion ~12 weeks from collection/submittal to the laboratory
- Determine need to perform and complete additional selenium analysis within 180 days of sample collection
- ARC will prepare a data summary report (DSR)
- EPA will coordinate a workshop/meeting to discuss/agree upon results and conclusions, with goal to

minimize comment/comment-response submittals

- DSR conclusions will attempt to differentiate (1) mine indicator chemicals (source characteristics [chemical type, ratio, frequency of detection, etc.]), (2) agricultural indicator chemicals and (3) background
- Results from Phase 1 will be used to inform plans for the next phases of work

Peripheral Facilities (Related to OU-3)

- Sampling of old pump house foundations should be considered
- NDEP suggested 2 to 3 composite samples per feature appropriate

Rail Spur (Wabuska Siding)

- ARC noted history of siding/spur is complex, reaching back prior to Anaconda, questioned if appropriate to include in OU-7

Conclusion

The EPA PM guided the afternoon discussion toward the scoping of subsequent phases. ARC was resistant to such specific scoping, preferring such planning be deferred until the Phase 1 results were in hand. This summary presents the 15 December 2015 Wabuska Drain RI strategy discussions. ARC agreed to keep stakeholders informed on the progression of the hydraulic analysis, what is found relating to agricultural practices and the fieldwork schedule.

Next Steps

Next steps for implementing the Wabuska Drain RI for Phase 1 activities are:

- ARC to execute fieldwork and coordinate fieldwork schedule with stakeholders
- ARC to share recent Evaporation Pond (OU-4) fieldwork and background groundwater quality study results with stakeholders
- ARC will coordinate wetland access for sampling with YPT
- ARC will complete hydraulic modeling of the current Wabuska Drain alignment
- ARC will determine agricultural practices used and document
- ARC will confirm Anaconda's corrective actions to mitigate flows from UEP to Wabuska Drain and share with stakeholders
- ARC will determine need to perform additional selenium analysis and share with stakeholders
- ARC will prepare and submit the DSR to stakeholders for review and comment
- ARC will update the CSM and share with stakeholders
- USEPA will coordinate a workshop/meeting with stakeholders to discuss fieldwork results/conclusions

ATTACHMENT 1. ATTENDANCE ROSTER

ATTACHMENT 2. WHITE BOARD/FLIP CHART PHOTOGRAPHS